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ABSTRACT

Several conclusions about child language were drawn from the data collected during the Bristol longitudinal study, "Language at Home and at School": (1) the amount of speech that adults address to their children is significantly associated with the children's rate of progress; (2) although many topics are introduced by parents, an equal if not greater number of sequences is initiated by their children; (3) the child contributes few utterances with propositional content that can be extended and, conversely, the child who frequently initiates topics that interest the adult will be more likely to elicit speech from which the child can learn; (4) the form of the conversation depends not only on the topic but also on the purpose of the participants; and (5) the presence of other children has an effect on the content and structure of the conversations. It was also determined that those children who already have some understanding of the purpose and organization of written language upon entering school are likely to have achieved a higher level of attainment two years later. This tended to be associated with the place and value of literacy in the everyday lives of the parents, which in turn is associated with their own educational and occupational status. Where this familiarity is absent, children are at a disadvantage, both because they lack skills that are important for learning in school and because this lack affects the ways in which their teachers interact with them. (HOD)

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Language and Learning: Talk between Adults and Children at Home and at School.

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The data to be discussed in this paper represent one aspect of the Bristol longitudinal study, 'Language at Home and at School'. This study, which began in 1973, has been following a representative sample of children, recording their spontaneous interaction with those around them, at regular intervals, first at home and later, for a sub-sample of 32 of them, in their classrooms at school. The recordings of the children's conversations, which were obtained with the aid of radio-microphones (cf. Wells, 1974 for details), were supplemented by interviews with the children's parents and teachers and by the administration of a variety of tests. For the children to be discussed in this paper, the data span the age range from 15 months to 7 years.

One of the major themes of the research has been to discover what factors influence children's learning: firstly, the learning of language itself, and secondly learning through the medium of language - though of course these two types of learning proceed together and cannot really be separated. Furthermore, since linguistic disadvantage has been hypothesized to be a major cause of the educational under-achievement of many lower-class children (whether as a result of restriction in code (Bernstein, 1971) or difference of dialect (Labov, 1970)), we have also sought to obtain evidence concerning the role of language in accounting for differences in attainment in the early years of schooling. This paper will report some of the findings that bear on these issues.

Adult-Child Interaction and the Learning of Language

Chomsky's (1965) theory of language acquisition, with its heavy emphasis on innate knowledge of linguistic universals, has provoked a number of socio- and psycho-linguistic investigations of the early stages of language development, of which some of the most interesting for our purposes have been concerned with the nature of the linguistic input to the young language learner and its effect on the course and rate of learning. The earliest studies were chiefly concerned to establish the existence of a special register adopted by adults when speaking to young children, and to describe its characteristics (cf. Snow (1977) for a review); more recently a number of investigators have attempted to determine whether the use of this register facilitates children's learning of language and, if so, whether some features are more important than others.

The results obtained, and the conclusions drawn from these investigations, have depended to a very considerable extent on the linguistic variables studied and on the methodology employed. Newport, Gleitman and Gleitman (1977), for example, who were almost exclusively interested in syntactic features of the register, found little evidence to support the hypothesis that modifications in mothers' speech have a general facilitating effect on language learning. However, when the children's own level of language development was controlled, in a study that similarly concentrated on syntactic features, Furrow, Nelson and Benedict (1979) found substantial evidence of a general facilitating effect of syntactic simplicity in mothers' speech. On the other hand, in studies that have investigated semantic and discourse features of the register, as well as the purely syntactic, simplicity of form has not been found to be of such great importance in facilitating learning as the semantic and pragmatic inter-relatedness of adults' and children's utterances. Cross (1978) found that more rapidly developing children received an input that was significantly different from that addressed to a 'normal' groupin the frequency with which mothers produced utterances that were semantically related to their children's preceding utterances, with frequency of expansions and extensions being of particular importance.

Our own work (Wells, in press b) substantially confirms Cross's results. Although, like the two groups of investigators who concentrated on syntactic features, we found a significant association between frequency of polar interrogatives and several measures of syntactic development, we have not found the syntactic simplicity of adult speech as such to be strongly predictive of children's progress. Indeed, with respect to the number of propositions per utterance and the number of utterances per turn, there was a significant association in the opposite direction: children who made more rapid progress tended to receive relatively more complex speech. However the most significant associations concerned the discourse functions of adults' utterances and their semantic relatedness to the children's current activity or focus of attention. Applying a principal components analysis to the variables which had been used to describe the adult speech, we have since identified six major components, of which four are significantly associated with the children's rate of progress. Of these one is syntactic: frequency of polar interrogatives; the other three are: the absolute amount of adult speech; the frequency of semantic extensions of the child's meaning; and the frequency of direct requests in the context of control of the child's behaviour. Together, these latter two components achieve a multiple

correlation with some of the measures of progress as high as r=.59 ($p < .001$, N=32) (Wells, Barnes and Satterley, in preparation).

Reviewing these studies, Wells and Robinson (in press) conclude that

> ' although there is not complete agreement about the precise nature of the significant associations, the arguments advanced by the authors of the four studies to explain their findings all tend to converge on an explanation in which the potentially facilitating features of [Baby Talk] are seen to occur in the interests of effective and mutually satisfying communication ....What is helpful about BT, it is suggested, is that it provides the child with experience of language being used to negotiate meanings and purposes in which he is directly involved, thereby providing him with the motivation and the evidence to discover the way in which the formal systems of linguistic resources are organised to realise those communicative intentions. '

As already stated, an important motivation for the study of adult input has been to demonstrate the not insignificant role of the environment for the language learner, and one result of this orientation has been a tendency for adult speech to be seen as having a uni-directional causal influence on the pattern and rate of children's language development. However, this is an over-simple account - as is suggested in the above quotation. If adult-child conversation is concerned - as are most other kinds of conversation - with the negotiation of meaning and purpose, it is clearly inappropriate to conceptualise the relationship between the two participants, or between their respective contributions, as unidirectional. Work on the structural organization of discourse (Labov and Fanshel, 1977; Sacks, Schegloff and Jefferson, 1974; Wells, Montgomery and MacLure, 1979) all tends to stress the reciprocity of conversational interaction and, although there is an asymmetry in skill and resources between the participants in adult-child conversation, the need for reciprocity still remains - and is usually observed - as is seen when extended sequences of talk are examined. As well as looking for effects of adults on children, therefore, we should also be looking at the ways in which children affect the behaviour of their adult interlocutors and, thereby, contribute to the determination of the conversations which provide the context for their learning.

Evidence in support of the need for such a perspective is already available and has, to some extent, been recognised. For example, in all the studies quoted, recognition was given to the fact that adults typically adjust the form of

their speech to the linguistic level of the child with whom they are conversing. However the adult's behaviour is influenced by contributions to the interaction from the child that are both more dynamic and more specific than the rather global characteristic of level of linguistic development.

1. Amount of speech. The amount of speech that adults address to their children is significantly associated with the children's rate of progress (Wells, in press b). However this is not unrelated to the talkativeness of the children: children who do not themselves contribute make unsatisfactory conversational partners and even the best-intentioned parent will gradually talk less if the child neither responds to parental initiations nor makes initiations of his own. (In our data, the correlation between amount of adult speech and amount of child speech is $r=.67$ ($p < .001$).)

2. Topic of Conversation. Although many topics are introduced by parents, either in the management of necessary household routines or because they believe they will be of interest to their children, an equal if not greater number of sequences of conversation is initiated by the children (80% was the proportion we found in an analysis of the data from children aged 39 months (Woll, Ferrier and Wells, 1975)). Clearly, therefore, what is talked about is determined at least as much by the children as by their adult interlocutors.

3. Extending the Child's Meaning. As already noted, the frequency of expansions and extensions of the child's meanings is significantly associated with his rate of progress, but here too the child is an important influence. If he contributes few utterances with propositional content that can be extended or if the topics he initiates fail to interest, then he will be less likely to receive adult input that facilitates his development. Conversely, the child who frequently initiates topics that interest his adult partner will be more likely to elicit speech from which he can learn. (The correlation in our data between amount of child speech and frequency of adult extensions is $r=.52$ ($p < .01$) (Wells, in press b); no quantitative data exist for the 'interest' of the child's contributions, but an impressionistic evaluation of the transcripts certainly supports the argument advanced above.)

4. The Uses of Language. The form a conversation takes depends not only on the topic that is developed, but also on the purpose - or conflicting purposes - of the participants. Here too children have an important

influence on the type of language that adults address to them, depending on what they themselves use language to do. Some children seem to be perpetually asking questions, whilst others use language chiefly to secure goods and services; some are argumentative, whilst others are accepting or submissive; some draw adults into their imaginative play, whilst others hardly engage in such play at all. Such differences in the purposes for which children habitually use language, although very inadequately documented as yet (but cf. Nelson, 1973,1979) must surely affect the way in which adults engage in conversation with them and hence the model that is made available for their further learning.

5. Child-child Talk. Like other researchers we have tended to concentrate on talk with adults, but we should not forget the potential influence of talk with other children. For most children in Western countries there is little doubt that it is the parents or other caretakers who are the young child's most frequent conversational partners and the model from whom he learns; but this is not true of all cultures (Blount, 1977). And even in our own culture most children have increasingly frequent opportunities to talk with other children as they get older, particularly where there are close siblings within the family. The presence of other children has a substantial effect on the content and structure of the conversations that the young child takes part in, as can be seen in an extreme form in the case of twins (Savić, 1979). In our own data we have found that the presence of other siblings less than 3 years different in age significantly retards the rate of language development, although, of course, children with close siblings may benefit in other ways from the increased opportunities for interaction with age-peers.

These are some of the ways (and there are no doubt others) in which children differ in the sorts of contribution that they make to the conversations in which they participate: whether such differences result from innate predispositions or from earlier experience of interaction is unimportant for the present argument. What is certain is that they influence the sorts of contribution that their adult interlocutors can make to the jointly constructed sequences of conversation which, it is argued, provide the major source and impetus to the child's continued learning of language. Thus, although the types of utterance that parents produce are clearly important as both model and feedback, it must be stressed that they do not occur independently of the contributions of their children. If the conversation that the child experiences is facilitative of

his further development, therefore, it is so as a result of an interaction to which both child and adult contribute.

The Role of Language in Early School Attainment

A similar picture of the importance of two-way interaction between child and adult also emerges from the study of the same children as they make the transition from home to school, although of course this is only one of the factors that has affected their success at school. Tests of oral language comprehension, perceptual discrimination, knowledge about literacy (Clay,1972) and vocabulary recognition (Brimer and Dunn, 1963) were administered on entry to school and tests of reading (Neale, 1969), of number and the same vocabulary test were administered at the end of each child's sixth term in school. Aggregate Z scores were calculated for each battery and these were submitted to correlational analysis with scores derived from language profiles at 2 years and again at 3½ years and with scores from various groups of questions in the structured interviews that were administered to the parents just prior to the child's school entry and at the end of the sixth term.

The strongest pattern to emerge from the results is a progressive differentiation amongst the children in measured attainment, with the predictions from one point to the next becoming increasingly powerful. Scores on the language profile at 2 years predict those at 3½ with a correlation of $r = .57$; these in turn predict scores on the test battery at 5 with a correlation of $r = .62$; and scores at 5 predict those at 7 with a correlation of $r = .83$, ($p < .001$ in all cases). This suggests a variation amongst the children in ability to learn that is manifested relatively early and which is cumulative in its effect on measured attainment. These results also provide confirmation for the importance that has been attributed to language in the degree of success that children achieve in the early stages of schooling.

However, when the tests administered on entry to school at 5 are looked at separately, by far the most significant as a predictor of attainment at age 7 is the test of knowledge of literacy ($r = .78$), but this is itself only predicted by the language profile at 3½ with a correlation of $r = .53$, suggesting that ability in oral language is only indirectly related to the skills measured by this test. It is necessary, therefore, to qualify the earlier finding concerning the importance of language for progress in school, and to state more precisely that it is knowledge and ability with respect to the written language that is of particular importance.

Two reasons can be suggested for this, Firstly, a major part of the curriculum in the first stage of schooling is concerned with the acquisition of literacy, and indeed two of the four tests of attainment that we administered at age 7 were tests of reading. Secondly, the skills involved in learning to read and write are characteristic of much of the learning that takes place at school in their relative abstractness and emphasis on the symbolic property of linguistic representations. A comparison of the spoken language occurring in the homes and classrooms of these children reveals little difference in either the structures or the functions used in the two settings; however there are quite important differences in the typical relationship between the language used and the organization of experience to which it refers (Wells, in press a). Talk at home typically arises out of immediate practical activity and is supported by the context in which it occurs; at school, on the other hand, direct contextual support for much of what is talked about is lacking and, indeed, as Donaldson (1978) has argued, it is one of the chief aims of schooling to help the child to 'disembed' his thinking from the supportive context of actual experience and to bring it under the control of meanings that are encoded in the linguistic message alone. Clearly, learning to use the written language is one very important way of developing this ability. Not surprisingly, therefore, those children who already have some understanding of the purpose and organization of written language on entry to school are likely to have achieved a higher level of attainment two years later.

This early acquaintance with written language is not usually acquired by the child's efforts alone. Previous studies of precocious readers (e.g. Durkin, 1966; Clark,1976) have found that such children tend to show an early interest in the printed language in their environment and to be encouraged in that interest by their parents. Although there were no precocious readers in our sample, many of the children could read a few words and write their own names by the time they started school, and these skills seem to have been fairly deliberately taught by their parents. However, much more important as a preparation for schooling was a general interest in books, magazines and catalogues and the personal possession of books by the child. Scores on these measures were associated with the test scores at age 5 with correlations of $r=.54$ and $r=.60$ respectively. But the strongest association of all those investigated was with the extent to which the child showed a tendency to spend extended periods of time on activities associated with literacy ($r=.68$). Such interests and habits in the children clearly owe much to the example provided by their parents and to the extent to which the parente have shared their own interests with their children. This is borne out by the strength of the association between the

separate measures of parents' and children's interest in literacy (r=.74). Thus it seems to be largely as a result of repeated interactions with their parents, centred on looking at books and other printed material, listening to stories and attempting to draw and write, that some children acquire the skills associated with written language that give them such an advantage in making the transition from home to school. It should be added, however, that the quality of more general conversation is also of importance. In an earlier study of a similar sample of children (Wells and Raban, 1978), a measure of the quality of adult speech in the later pre-school years was strongly associated with attainment at the age of 7 years (r=.66, N=20), even though in that study it was only attainment in reading that was investigated.

It is in this context that we can best understand the association found between the children's attainment at school and their class of family background. No such significant association was found in the early stages of language development at home, either with the children's language profiles or with the quality of adult speech addressed to them. Nor was there a significant relationship between class of family background and the amount of help that parents reported that they gave with school work, once the children had started school. However on both occasions when the children were formally assessed in school, their performance on the various tests was significantly correlated with their class of family background, with the correlation with overall test scores being r=.66 at age 5 and r=.59 at age 7.* The reason for these associations becomes clearer when we examine the relationship between class of family background and the measures of interest in literacy in the home. For both parents and children the correlation was r=.65. It appears, therefore, that the important class-associated difference between homes is to be found in the value that is placed on literacy and on the relatively context-independent exchange of meanings that is facilitated by the symbolic power of language, particularly in its written form. And this, not surprisingly, is associated with the extent of the

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* It should be pointed out, however, that the actual size of the correlations was probably inflated by the way in which the sample was selected. In order to maximise the opportunity for comparisons to be made of the characteristics of high and low attainers, the sample was biased in favour of children with relatively extreme scores on the language profile at 3½ years, and these children had already been found to be more likely to come from the two extremes on the scale of family background (Wells,1978). At both ages the highest correlations with individual tests occurred in relation to tests involving literacy.

parents' own education and with the role that reading and writing play in their everyday activities (Wells, in press a). Where children are involved early and frequently in such uses of language, they not only develop interests and skills that will be relevant to the acquisition of literacy at school, but they also begin to develop a facility with 'disembedded' uses of language that are characteristic of much classroom talk and also of test situations, such as those in which attainment is formally assessed.

There remains one important influence on school attainment that we have not yet fully investigated, and that is the interaction between teacher and pupil which provides the context for much of the learning that takes place at school. Just as qualitative differences in the speech addressed to the children in the early stages of language learning were associated with the children's rate of progress, so it might be expected that similar differences between teachers in their teaching styles would be associated with the children's progress in school. In the earlier study already referred to (Wells and Raban, 1978), a trend was found for children who made greater or less progress in learning to read than would have been predicted on the basis of their knowledge of literacy on entry to school to have been taught by teachers who were subjectively judged to be more or less successful than average in their style of teaching. More objective measures of teaching style will be available in the present study from the recordings made of naturally-occurring interaction in the classroom, but the analysis of this material still has to be completed.

However, when considering the conversations through which learning takes place in the early years at school, the same recognition needs to be given to the reciprocal nature of interaction as was argued for with respect to the early stages of language learning. Although the opportunity for pupils to influence the topic and purpose of conversation is severely curtailed in most classrooms, there are still quite marked differences between children in their willingness to initiate topics and in the extent to which their contributions are judged to be appropriate to the teacher's purpose at any particular point. And such differences can be observed to affect the teachers' style of interaction in ways which constrain the opportunities that are provided for pupil learning.

Equally important are the more global adjustments that teachers make to the perceived abilities of their pupils. It has been claimed by some

investigators that teachers tend to have stereotypical expectations about their pupils, based on limited knowledge of their home background or on such superficial characteristics of their speech as accent and dialect, and that, as a result, they modify the curriculum and their teaching style in ways which render these expectations more likely to be fulfilled. Whilst this may be partly true, a much more important influence on teacher behaviour is the actually observed differences between children in their ability to cope with test-like situations and in their knowledge about literacy on entry to school. Given that these differences are, in fact, strongly predictive of later attainment within the context of the sort of curriculum that is typical of most first schools, it is not surprising that differences in oral language ability, as such, do not seem to play as large a part in accounting for attainment at age 7 as might be expected in the light of the arguments that have been put forward for the role of language in educational success.

In summary, therefore, it seems that whilst academic attainment is to some extent dependent on oral language ability, and that this, in turn, is associated with the quality of linguistic interaction experienced during the pre-school years, an adult style of conversation that facilitates the development of oral language is not in itself sufficient to equip a child to benefit from the opportunities for learning provided by the more formal context of the classroom. Familiarity with more abstract and less context-dependent uses of language, such as those associated with written text, seems to be particularly important here, and this tends to be associated with the place and value of literacy in the everyday lives of the parents, which in turn is associated with their own educational and occupational status. Where this familiarity is absent, children are at a disadvantage, both because they lack skills which are important for learning in school and also because this lack of skills affects the ways in which their teachers interact with them.

Postcript

The results presented in this paper, like those of most of the other investigators referred to, are derived from correlational analyses of summary variables, such as frequencies of particular utterance types, scores on tests and coded responses to interview questions. However, while such results have heuristic value in identifying factors associated with children's learning, a major implication of the findings reported here is that such a methodological approach fails to explain the dynamics of the learning situation as it is

experienced - namely through conversational interaction. It has been argued that one of the essential characteristics of such interaction is that the full import of particular utterances or other types of communicative behaviour can only be fully understood when they are viewed as strategic contributions to the construction of an inter-subjective reality, in which meanings and intentions are proposed and negotiated by both adult and child participants. The conversational context of learning is thus a joint creation, and to find appropriate methods of analysis that give due recognition to this fact remains one of the most important objectives of our future research.

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